

Item	Items	Description
S1	797783	TRAFFIC OR PACKET? ? OR FRAME? ? OR DATAGRAM? ? OR FLOW? ? OR MESSAGE? ?
S2	1811010	DATA OR INFORMATION OR REQUEST? ? OR TRANSACTION? ? OR TASK? ? OR JOB? ?
S3	188243	S1:S2(5N) (ROUTE OR ROUTES OR ROUTED OR ROUTING OR DISTRIBUTED OR DISTRIBUTES OR DISTRIBUTION OR DISTRIBUTING OR DIRECT?? OR DIRECTING OR REDIRECT? OR FORWARD? OR ADVANCE? OR RELAY???)
S4	10065	QOS OR QUALITY(2W)SERVICE? ?
S5	37147	(SERVICE? ? OR TRANSACTION? ? OR PRIORITY OR REQUEST OR SECURITY) (3N) (LEVEL OR KIND? ? OR TYPE? ? OR GRADE? ? OR CATEGORY OR CATEGORIES OR CLASS?? OR CLASSIFICATION? ?)
S6	2955	S4:S5(5N) (BEST OR CORRECT OR RIGHT OR SUITED OR SUITABLE OR APPROPRIATE OR CAPABLE OR MOST()ABLE OR PROPER)
S7	6232	LOAD? ?(3N)BALANCE???
S8	6401	(BANK? ? OR FARM? ? OR POOL? ? OR GROUP???? OR COLLECTION? ? OR CLUSTER???) (5N) (SERVER? ? OR WEBSERVER? ?)
S9	20971	SERVICE? ?(3N) (LEVEL OR KIND? ? OR TYPE? ? OR GRADE? ? OR CATEGORY OR CATEGORIES OR CLASS?? OR CLASSIFICATION? ?)
S10	72110	(USER? ? OR INDIVIDUAL? ? OR REQUESTOR? ? OR PERSON? ? OR CLIENT? ? OR ENTITY OR ENTITIES) (3N) (ID OR IDS OR IDENTIFIER? ? OR IDENTIFICATION? ? OR TYPE? ? OR KIND? ? OR LEVEL? ? OR GRADE? ? OR CLASS?? OR CLASSIFICATION? ? OR CATEGORY???)
S11	278569	(BEST OR CORRECT OR RIGHT OR SUITED OR SUITABLE OR APPROPRIATE OR CAPABLE OR MOST()ABLE OR PROPER) (5N) (SERVER? ? OR WEBSERVER? ? OR DEVICE? ? OR UNIT? ? OR NODE? ? OR COMPUTER? ? OR PC? ? OR TERMINAL? ? OR MACHINE? ? OR HOST? ?)
S12	3164	S3(5N)S11
S13	359	S4:S5(5N)S10(5N)S12
S14	7	S12(5N)S7:S8(5N)S9
S15	95	S3(30N)S7:S8(30N)S9
S16	65	S3(20N)S7:S8(20N)S9
S17	67	S14 OR S16
S18	58	S17 NOT S13

File 347:JAPIO Nov 1976-2003/Dec(Updated 040402)

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File 350:Derwent WPIX 1963-2004/UD,UM &UP=200425

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Set	Items	Description
S1	4670641	TRAFFIC OR PACKET? ? OR FRAME? ? OR DATAGRAM? ? OR FLOW? ? OR MESSAGE? OR DATA OR INFORMATION OR REQUEST? ? OR TRANSACTION? ? OR TASK? ? OR JOB? ?
S2	170737	S1(5N)(ROUTE OR ROUTES OR ROUTED OR ROUTING OR DISTRIBUTE - OR DISTRIBUTES OR DISTRIBUTION OR DISTRIBUTING OR DIRECT?? OR DIRECTING OR REDIRECT? OR FORWARD? OR ADVANC? OR RELAY???)
S3	225529	(BEST OR CORRECT OR RIGHT OR SUITED OR SUITABLE OR APPROPRIATE OR CAPABLE OR MOST()ABLE OR PROPER)(5N)(SERVER? ? OR WEBSERVER? ? OR DEVICE? ? OR UNIT? ? OR NODE? ? OR COMPUTER? ? OR PC? ? OR TERMINAL? ? OR MACHINE? ? OR HOST? ?)
S4	3757	QOS OR QUALITY(2W)SERVICE? ?
S5	14962	(SERVICE? ? OR TRANSACTION? ? OR PRIORITY OR REQUEST OR SECURITY)(3N)(LEVEL OR KIND? ? OR TYPE? ? OR GRADE? ? OR CATEGORY OR CATEGORIES OR CLASS?? OR CLASSIFICATION? ?)
S6	413	S4:S5(5N)(BEST OR CORRECT OR RIGHT OR SUITED OR SUITABLE OR APPROPRIATE OR CAPABLE OR MOST()ABLE OR PROPER)
S7	445557	PACKET? OR TRAFFIC OR NETWORK? OR LOAD()BALANC???
S8	564	S2(5N)S3
S9	347	S2(5W)S3
S10	8	S8 AND S4:S5
S11	41	S2 AND S6
S12	47	S10:S11
S13	4876	LOAD? ?(3N)BALANC???
S14	2526	(BANK? ? OR FARM? ? OR POOL? ? OR GROUP???? OR COLLECTION? ?)(5N)(SERVER? ? OR WEBSERVER? ?)
S15	6	S8 AND S13
S16	4	S8 AND S14
S17	8	S15:S16
S18	7	S17 NOT S12
S19	144654	(BEST OR CORRECT OR RIGHT OR SUITED OR SUITABLE OR APPROPRIATE OR CAPABLE OR MOST()ABLE OR PROPER)(5N)(SERVER? ? OR WEBSERVER? ? OR DEVICE? ?)
S20	190	S2(5W)S19
S21	74	S7 AND S20
S22	68	S21 NOT (S12 OR S18)
S23	294	CLUSTER???(5N)(SERVER? ? OR WEBSERVER? ?)
S24	1	S8 AND S23
S25	0	S24 NOT S18
S26	6106	SERVICE? ?(3N)(LEVEL OR KIND? ? OR TYPE? ? OR GRADE? ? OR CATEGORY OR CATEGORIES OR CLASS?? OR CLASSIFICATION? ?)
S27	45	(S13:S14 OR S23) AND S26
S28	43	S27 NOT (S12 OR S18 OR S22)

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S1	21054740	TRAFFIC OR PACKET? ? OR FRAME? ? OR DATAGRAM? ? OR FLOW? ? OR MESSAGE? OR DATA OR INFORMATION OR REQUEST? ? OR TRANSACTIONS? ? OR TASK? ? OR JOB? ?
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S4	433797	QOS OR QUALITY(2W)SERVICE? ?
S5	712912	(SERVICE? ? OR TRANSACTION? ? OR PRIORITY OR REQUEST OR SECURITY) (3N) (LEVEL OR KIND? ? OR TYPE? ? OR GRADE? ? OR CATEGORY OR CATEGORIES OR CLASS?? OR CLASSIFICATION? ?)
S6	38307	S4:S5(5N) (BEST OR CORRECT OR RIGHT OR SUITED OR SUITABLE OR APPROPRIATE OR CAPABLE OR MOST()ABLE OR PROPER)
S7	2778	S2(5N)S3
S8	151	S7(50N)S4:S5
S9	71	RD (unique items)
S10	53	S9 NOT PD>20001229
S11	2722	(USER? ? OR INDIVIDUAL? ? OR REQUESTOR? ? OR PERSON? ? OR CLIENT? ? OR ENTITY OR ENTITIES) (3N) (ID OR IDS OR IDENTIFIER? ? OR IDENTIFICATION? ? OR TYPE? ? OR KIND? ? OR LEVEL? ? OR GRADE? ? OR CLASS?? OR CLASSIFICATION? ? OR CATEGOR???)
S12	29	S7(50N)S11
S13	18	RD (unique items)
S14	847	S2(30N)S6
S15	49842	LOAD? ?(3N)BALANC???
S16	103386	(BANK? ? OR FARM? ? OR POOL? ? OR GROUP???? OR COLLECTION? ? OR CLUSTER???) (5N) (SERVER? ? OR WEBSERVER? ?)
S17	556750	SERVICE? ?(3N) (LEVEL OR KIND? ? OR TYPE? ? OR GRADE? ? OR CATEGORY OR CATEGORIES OR CLASS?? OR CLASSIFICATION? ?)
S18	2585	S15:S16(50N)S17
S19	6423792	NETWORK? ?

S20 1362731 PACKET? ? OR TRAFFIC
S21 151 S2(15N)S15:S16(15N)S17(15N)S19(15N)S20
S22 75 RD (unique items)
S23 50 S22 NOT (S10 OR S13 OR PD>20001229)

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S1	12461908	TRAFFIC OR PACKET? ? OR FRAME? ? OR DATAGRAM? ? OR FLOW? ? OR MESSAGE? OR DATA OR INFORMATION OR REQUEST? ? OR TRANSACTIONS? ? OR TASK? ? OR JOB? ?
S2	420684	S1(5N) (ROUTE OR ROUTES OR ROUTED OR ROUTING OR DISTRIBUTE - OR DISTRIBUTES OR DISTRIBUTION OR DISTRIBUTING OR DIRECT?? OR DIRECTING OR REDIRECT? OR FORWARD? OR ADVANC? OR RELAY???)
S3	109543	(BEST OR CORRECT OR RIGHT OR SUITED OR SUITABLE OR APPROPRIATE OR CAPABLE OR MOST()ABLE OR PROPER) (5N) (SERVER? ? OR WEB-SERVER? ? OR DEVICE? ? OR UNIT? ? OR NODE? ? OR COMPUTER? ? OR PC? ? OR TERMINAL? ? OR MACHINE? ? OR HOST? ?)
S4	62842	QOS OR QUALITY(2W)SERVICE? ?
S5	55588	(SERVICE? ? OR TRANSACTION? ? OR PRIORITY OR REQUEST OR SECURITY) (3N) (LEVEL OR KIND? ? OR TYPE? ? OR GRADE? ? OR CATEGORY OR CATEGORIES OR CLASS?? OR CLASSIFICATION? ?)
S6	2989	S4:S5(5N) (BEST OR CORRECT OR RIGHT OR SUITED OR SUITABLE OR APPROPRIATE OR CAPABLE OR MOST()ABLE OR PROPER)
S7	322	S2(5N)S3
S8	14	S4:S5 AND S7
S9	272	S2 AND S6
S10	242	S9 AND NETWORK? ?
S11	202	S10 AND (PACKET? ? OR TRAFFIC)
S12	9	RD S8 (unique items)
S13	21604	LOAD? ?(3N)BALANC???
S14	4541	(BANK? ? OR FARM? ? OR POOL? ? OR GROUP???? OR COLLECTION? ? OR CLUSTER???) (5N) (SERVER? ? OR WEBSERVER? ?)
S15	42017	SERVICE? ?(3N) (LEVEL OR KIND? ? OR TYPE? ? OR GRADE? ? OR - CATEGORY OR CATEGORIES OR CLASS?? OR CLASSIFICATION? ?)
S16	95170	(USER? ? OR INDIVIDUAL? ? OR REQUESTOR? ? OR PERSON? ? OR - CLIENT? ? OR ENTITY OR ENTITIES) (3N) (ID OR IDS OR IDENTIFIER? ? OR IDENTIFICATION? ? OR TYPE? ? OR KIND? ? OR LEVEL? ? OR GRADE? ? OR CLASS?? OR CLASSIFICATION? ? OR CATEGOR???)
S17	31	S13:S14 AND S15 AND S16
S18	20	RD (unique items)
S19	4	S7 AND S16

19/5/1 (Item 1 from file: 35)
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Intelligent content-based routing for enhanced Internet services

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An intelligent content-based router should be designed to analyze data and find a suitable server for processing a client's request quickly and efficiently. Current content routers examine only the HTTP based URL request and routes the request to the "best" server for processing. These routers fail to examine different types of TCP-based user requests. The content router developed in this thesis examines all type of TCP-based requests. The content router is a core router that simply forwards packets to the edge routers for delivery after performing its content based processing. This router can be replicated to achieve higher performance in large networks. Moreover, by adopting a formal design approach, which is subject to mechanical evaluation using the Z-EVES tool, the correctness of the design is ascertained.

The objectives of this thesis are to: (1) Provide an object-oriented design of an intelligent content-based router (a network device that routes packets based on their contents) for e-commerce applications using the UML paradigm. (2) Model the design using the Z specification language to guarantee correctness and prove the reliability of the design. In particular, Z notation will provide the capability to capture both dynamic and static features and operations of the proposed content-based router. (3) Provide a prototype implementation of the design as a proof of concept.